

**Michigan Department of Environmental Quality
Water Resources Division
Nonpoint Source Program**

Measures of Success

Vision

The vision of Michigan's Nonpoint Source (NPS) Program is to protect high-quality waters and restore waters impaired by NPS pollution. The NPS Program's approach to achieve this vision is centered on watershed management and is outlined through strategies and short term actions in the Michigan NPS Program Plan. Forming the foundation of the plan are seven goals (listed below) which guide the efforts of program staff and our partners, creating a thorough approach to managing NPS pollutants.

Goals

- I. Develop and implement watershed management plans (WMPs) to restore and protect priority watersheds.
- II. Eliminate or reduce NPS pollutants and causes of impairments.
- III. Increase public awareness of NPS pollutants and causes of impairment and encourage individuals to adopt behaviors to reduce NPS pollutants and causes of impairments.
- IV. Efficiently manage pass-through grants and help stakeholders identify funding sources to restore and protect watersheds.
- V. Support compliance and enforcement efforts to restore and protect priority watersheds.
- VI. Focus monitoring to document impairments and threats to high quality waters, and assess the effectiveness of efforts to restore and protect priority watersheds.
- VII. Efficient program operations.

These goals focus on restoring and protecting priority waters, educating stakeholders, and supporting efforts to eliminate NPS impairments. A comprehensive evaluation is used to ensure that NPS pollution issues are being addressed in an efficient manner.

Measures

To evaluate the progress of Michigan's NPS Program, a set of metrics is used to highlight where progress to restore and protect Michigan waters from NPS pollution has been made, and where improvement is still needed. These measures of success (MOS) determine if goals outlined in the NPS Program Plan, and ultimately the NPS program vision, are met. While designed to track how well NPS program work is improving the environmental health of Michigan, these measures also:

- Provide measurable goals for staff to work toward.
- Guide strategy, outcomes, and priorities of the program by highlighting where past approaches have been successful or fallen short.
- Clearly communicate achievements to lawmakers, partners, and other stakeholders.

As outlined in the Michigan NPS Program Plan, the following measures of success have been selected to evaluate the accomplishments of the program. Each measure has its own timeframe from which data is analyzed, most of which are five-year intervals. Along with each measure is a description of the progress made, as well as an outline for future efforts.

Restoration of Impaired Waters

MOS-1: Between October 1, 2012, and September 30, 2017, the NPS Program, in collaboration with other programs, will target restoration of ten water bodies (impaired by pollutants other than mercury or polychlorinated biphenyls [PCBs]) included on the state's nonattainment list in 2006.

Progress

From 2007 to 2012, 34 water bodies with designated use impairments due to NPS pollutants other than mercury or PCBs were restored. More progress has been made to restore water bodies in Michigan with seven additional water bodies being removed from the nonattainment list between 2012 and 2014. This measure is further described in **Figure 1**.

What's Next

The goal of restoring all NPS-related designated use impairments in ten water bodies by September 30, 2017, has nearly been met. The NPS Program continues to administer pass-through grants, as well as provide technical support to other initiatives working to restore impaired waterbodies. To protect current and recently restored waterbodies, efforts by local stakeholders, such as education and outreach initiatives, can help ensure that designated uses are maintained in high quality watersheds going forward. Informing compliance staff of any violations will also help protect these waterbodies from new sources of NPS pollution. By continuing these efforts, the NPS Program is confident this measure of success will be met by the targeted end date.

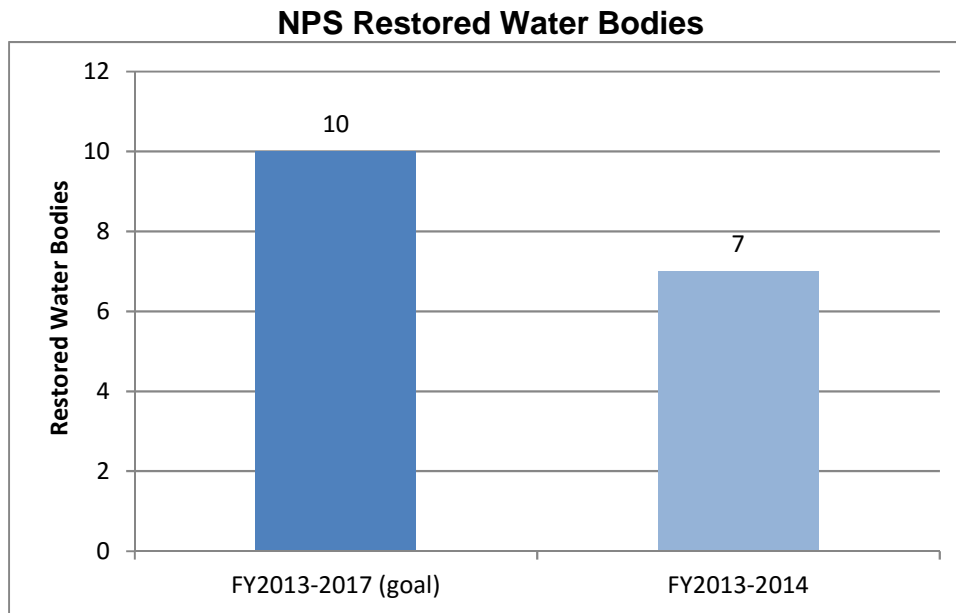


Figure 1. Number of water bodies restored from NPS impairments.

MOS-2: Between October 1, 2012, and September 30, 2017, the NPS Program will target restoration of twenty specific causes of water body impairment included on the state's nonattainment list in 2006.

Progress

Between 2012 and 2014, twenty-five specific causes of designated use impairment were restored. **Figure 2** compares the progress made in 2013-2014 to the set goal for 2013-2017.

What's Next

This measure of success has been met and surpassed ahead of schedule. While this is great progress, these water bodies remain partially impaired due to other sources of NPS pollution. Developing projects with local partners informed by approved WMPs, continuing to monitor and assess watersheds, and supporting compliance and enforcement efforts will assist in rectifying unresolved water quality problems and ultimately remove water bodies from the nonattainment list.

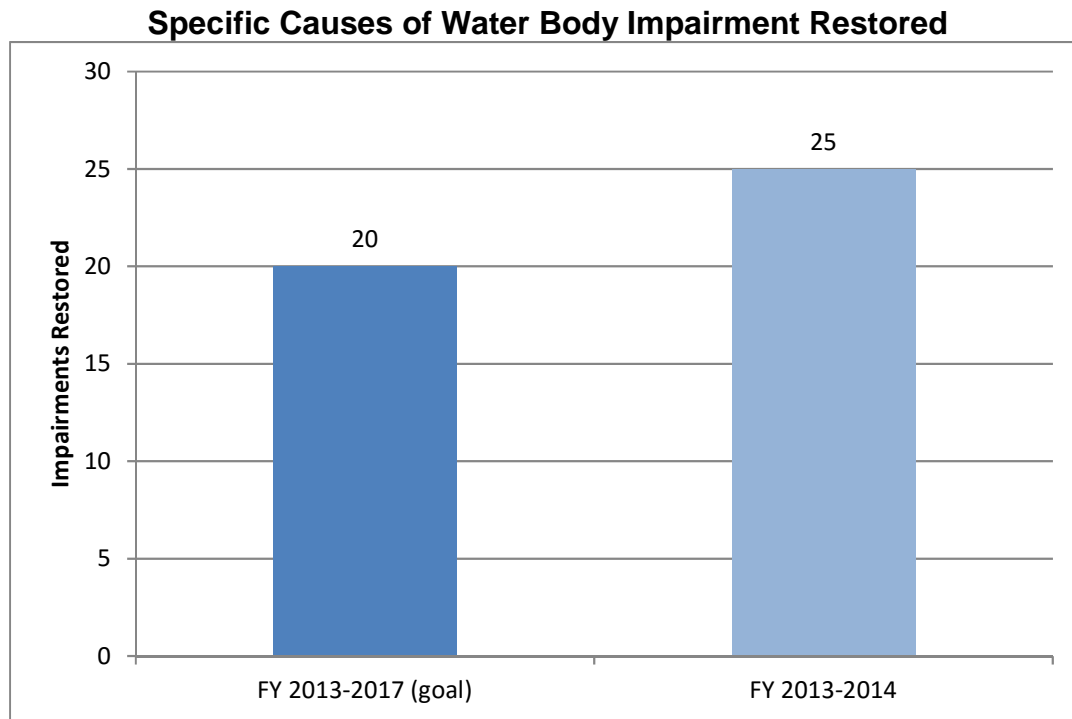


Figure 2. Number of specific causes of water body impairment restored.

MOS-3: Between October 1, 2012, and September 30, 2017, The NPS Program will improve water quality conditions in five 12-digit Hydrologic Unit Code (HUC) watersheds in Michigan.

Progress

Between 2007 and 2012, two 12-digit HUC watersheds in Michigan were restored for all NPS designated use impairments and an additional three saw a 40 percent improvement in water quality. Progress continued in 2013 through 2015, with four 12-digit HUC watersheds being fully restored for all NPS designated use impairments. Two additional 12-digit HUC watersheds also saw a 40 percent improvement in water quality.

What's Next

Water quality improvements in six 12-digit HUC watersheds between 2013 and 2015. This measure of success has been met. The NPS program will continue working to improve conditions at the 12-digit HUC scale with a focus on restoring all designated uses impaired by NPS sources. NPS staff will also continue developing success stories documenting NPS-related improvements.

MOS-4: Between October 1, 2012, and September 30, 2017, the NPS monitoring coordinator and NPS district staff will develop twenty environmental success stories.

Progress

Michigan's NPS Program defines an environmental success story as work resulting in measurable improvement in water quality or in-stream habitat. Monitoring water quality, in-stream habitat, and stream morphology parameters (pre- and post-implementation) enable water quality improvements and reductions in NPS pollutants to be tracked. Between 2005 and 2012, the Michigan NPS Program developed twenty environmental success stories. Nine additional environmental success stories were developed between 2013 and 2015, resulting in a

total of twenty-nine environmental success stories between 2005 and 2015. **Figure 3** tracks the progress made toward this measure.

What's Next

To meet this measure of success, eleven success stories must be developed by September 30th, 2017. NPS staff will continue to evaluate work restoring and protecting Michigan's waters for potential environmental success stories.

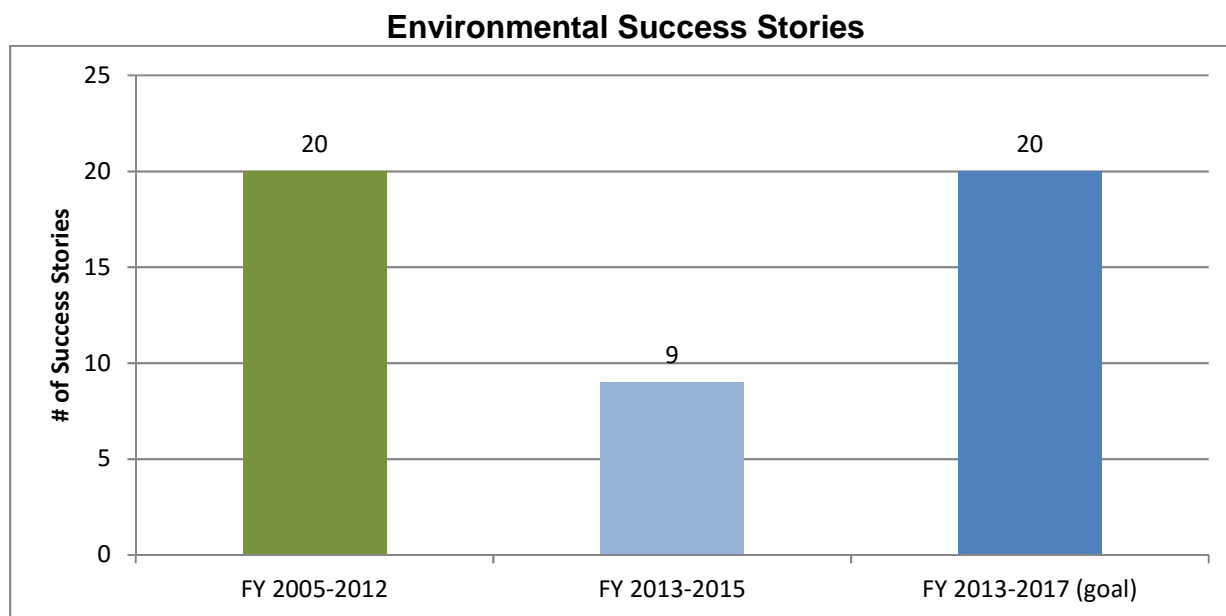


Figure 3. Number of environmental success stories developed compared to set goal for 2013-2017.

Protect and Restore Natural Hydrology

MOS-5: Between 2012 and 2017, the number of streams in Michigan showing increased flashiness as measured by the Richards-Baker Flashiness Index (R-B Index) will not increase. Gauged streams will be divided into three categories: 1. increasing flashiness, 2. decreasing flashiness, and 3. no change. The number of streams with increasing flashiness in 2017 will not increase compared to the number with increasing flashiness in 2012. The number of streams with decreasing flashiness will increase between 2012 and 2017. The 2012 baseline for this measure of success is 39 streams with increasing flashiness and 31 streams with decreasing flashiness.

Progress

The R-B Index is an indicator of stream flashiness. Using information collected from United States Geological Survey stream gauges, this index was developed to measure how stream flashiness is changing over time. Using information gathered from this index, watersheds experiencing alterations in hydrology, excessive erosion, and degraded habitat can be identified.

The R-B Index analysis was last completed in 2012. See **Figure 4** below for the flashiness trend analysis done for 2007-2012. Between 2007 and 2012, 72 stream gauges were analyzed. Flashiness increased in 29 streams, decreased in 14 streams, and remained stable in 29 streams.

What's Next

The next R-B Index analysis will be completed in 2017.

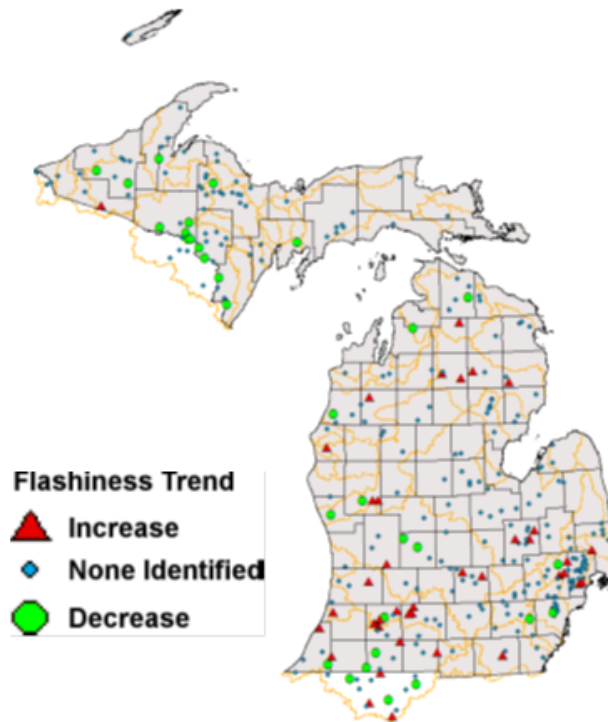


Figure 4. Flashiness Trend by Gage, 2007-2012.

Protection of High Quality Waters

MOS-6: The NPS Program will target long-term protection of 5,000 acres in priority watersheds between January 1, 2013, and December 31, 2017. Conservation easements are the primary form of long-term protection.

Progress

Michigan's NPS Program has been very successful in implementing long-term protection in watersheds across the state. Using conservation easements as the primary mechanism for protection, between 2007 and 2012, 10,788 acres and 166,817 linear feet of river, lake, and wetland were protected through 119 individual conservation easements. Building upon this success, 1,668 acres and 56,029 linear feet of river, lake, and wetland were protected by permanent conservation easements between 2013 and 2015. **Figure 5** compares the number of acres protected in 2013-2015 to the set goal for 2013-2017.

What's Next

Three years into the new tracking period, 33 percent of the 5,000-acre goal for long-term protection has been met. An additional 3,332 acres will need to come under long-term protection by December 31st, 2017, in order to meet this measure of success. Michigan's NPS Program will continue to fund protection-based pass-through grant projects to meet this measure.

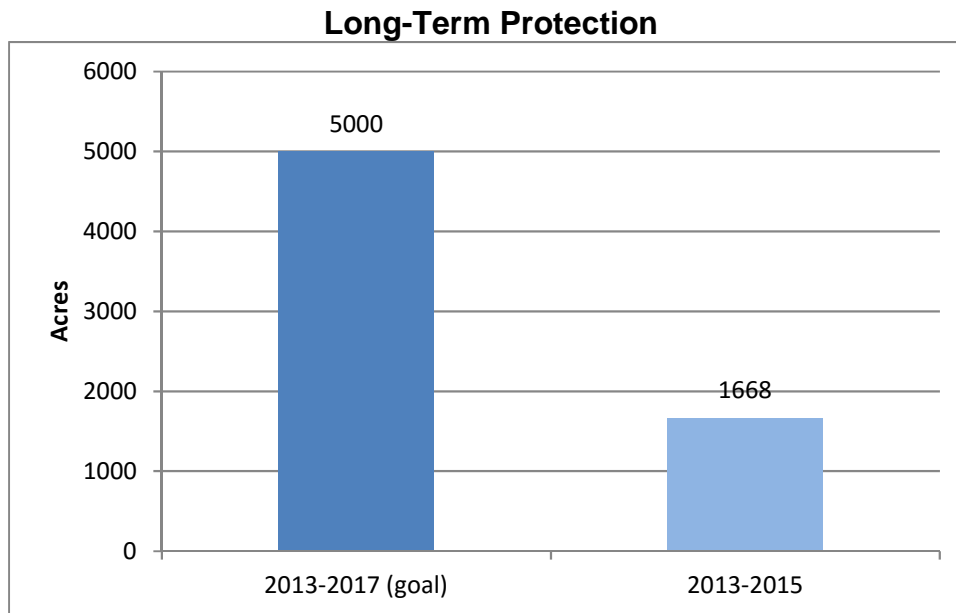


Figure 5. Five-year goal and actual number of acres under long-term protection practices.

MOS-7: The NPS Program will target sediment, nitrogen, and phosphorus reductions of 760 tons; 14,000 pounds; and 2,300 pounds, respectively, from long-term protection practices implemented at priority watersheds between January 1, 2013, and December 31, 2017.

Progress

From 2007 to 2012, 119 conservation easements were implemented in Michigan resulting in an estimated reduction of 4,776 tons per year of sediment; 33,117 pounds per year of nitrogen; and 8,349 pounds per year of phosphorus. Between 2013 and 2015, long-term protection practices led to a reduction in 113 tons of sediment (15 percent of goal); 4,520 pounds of nitrogen (32 percent of goal); and 486 pounds of phosphorus (21 percent of goal) in Michigan waterways.

Figures 6, 7, and 8 chart the progress made toward the 2017 goals respectively for sediment, nitrogen, and phosphorus reductions stemming from long-term protection practices.

What's Next

Between 2013 and 2015, six projects featuring a conservation easement component were funded through the NPS Program and efforts are ongoing to purchase these easements. In addition, staff and grant applicants will focus on identifying priority properties to protect. Once these properties are identified, building positive relationships with landowners through education and outreach activities will be instrumental to obtaining stakeholder buy-in, and ultimately reaching the goal of reducing NPS pollutants. Grantees will be encouraged to act promptly to secure landowner commitment for easements.

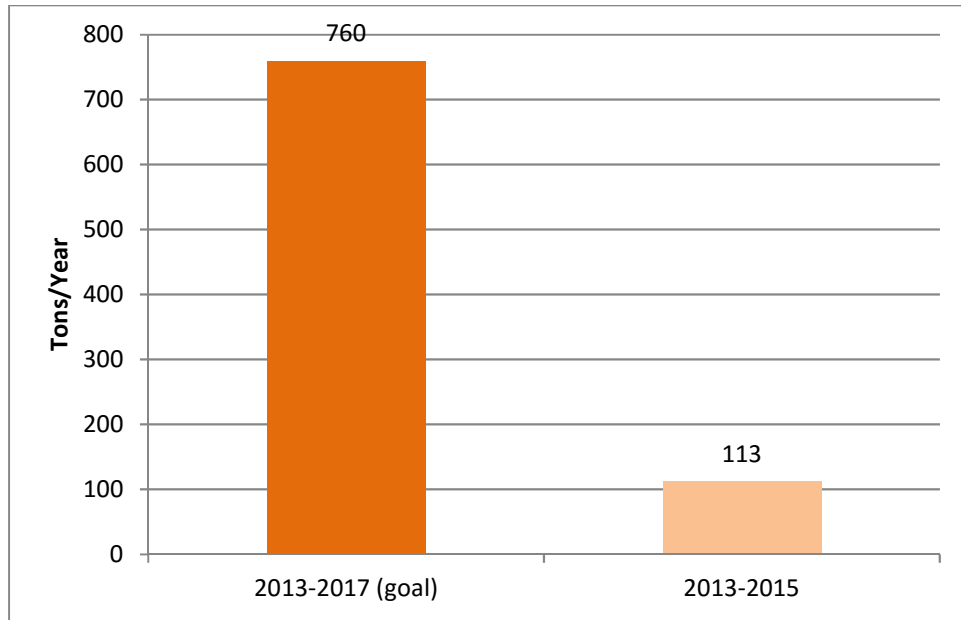


Figure 6. Five-year goal and actual sediment reductions from long-term protection practices.

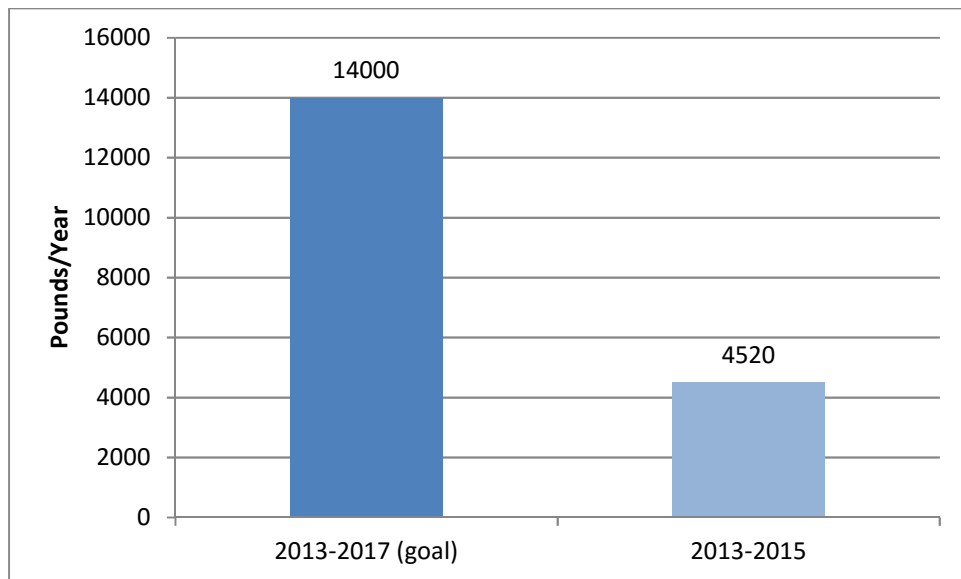


Figure 7. Five-year goal and actual nitrogen reductions from long-term protection practices.

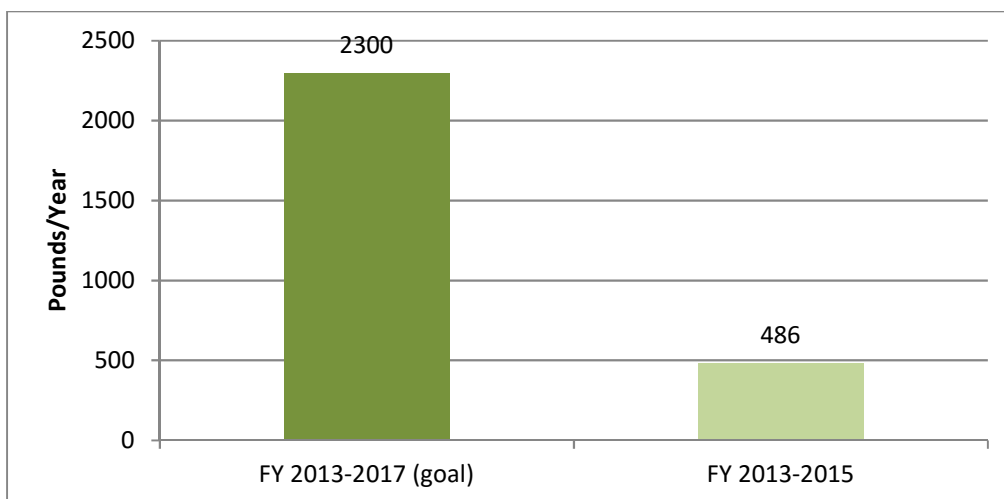


Figure 8. Five-year goal and actual phosphorus reductions from long-term protection practices.

MOS-8: No water bodies or reaches in “healthy watersheds” covered by nine-element WMPs, and identified as attaining water quality standards in the 2012 Integrated Report, will be moved to the nonattainment list due to NPS causes of pollution. “Healthy Watersheds” are defined by the NPS Program as those with high ecological capacity and low stressor scores as determined by the NPS Program’s watershed prioritization process.

Progress

Using the NPS Program’s watershed prioritization process, a list of “Healthy Watersheds” was generated. This list includes 129 10-digit HUC watersheds from across the state. Of these 129 watersheds, there was one reach that was covered by a nine-element approved WMP, was previously meeting water quality standards, and is now on the nonattainment list due to a cold water fishery designated use impairment. This reach is in a pristine watershed. However, there is a fish hatchery in this reach that could be a contributor to the reduction in dissolved oxygen levels.

What’s Next

The NPS Program will continue to focus efforts on activities that will help protect “healthy watersheds” and maintain high quality waters in Michigan.

MOS-9: Using the draft 2012 Integrated Report as the baseline, no water bodies or reaches will be moved to the nonattainment list in watersheds covered by the Michigan Department of Environmental Quality (MDEQ) approved WMP administered by “very active” watershed groups. Very active watershed groups are defined by NPS District Staff and have the following characteristics: regularly advance policies promoting a healthier watershed, continually engage stakeholder through information and education (I&E) activities, have active monitoring programs, are economically supported by their stakeholders, are acknowledged as local experts, and are viewed as critical participants in discussion and decisions related to the watershed.

Progress

NPS staff identified 84 “very active” watershed groups working to implement approved WMPs. Eleven reaches in eight watersheds with approved WMPs where “very active” watershed groups are present were moved to the nonattainment list between 2012 and 2014. Twelve other

reaches were added to the nonattainment list, but these reaches were added due to splitting of previous Assessment Unit Identifiers or because information to officially document these reaches as impaired was collected. These twelve reaches do not indicate new water quality problems and are not counted toward this measure of success.

What's Next

This measure of success has not been met. New sources of impairment include total and partial body contact recreation, cold water fishery, warm water fishery, and other indigenous aquatic life and wildlife. Of the eleven reaches moved to the nonattainment list between 2012 and 2014, seven were reaches newly impaired for total and partial body contact recreation. Of those seven reaches, six were in primarily agricultural watersheds. The seventh reach is also located in a watershed with significant agricultural land use, but includes urban and natural land uses as well. The reach with a cold water fishery impairment is in close proximity to a fish hatchery, which could be contributing to water quality problems in the area.

Watersheds with very active watershed groups have and continue to benefit from these dedicated groups that are committed to improving water quality. NPS Program staff will continue to work with stakeholders, watershed groups, and other partners, to restore impaired waters and protect high quality waters in Michigan.

Elimination or Reduction of NPS Pollution

MOS-10: For the years 2013 through 2017, the annual sum of pollutant load reductions from NPS pass-through grant funded projects will be at least 2 percent of the United States Environmental Protection Agency's (USEPA) 2010 annual national goal for NPS pollutant load reduction. Pollutant reduction estimates will be reported to the USEPA.

Progress

This measure has not been met. Michigan's annual average reduction goal for sediment, phosphorus, and nitrogen is 14,000 tons per year; 90,000 pounds per year; and 170,000 pounds per year, respectively. Between 2007 and 2012, NPS Program pass-through grants achieved approximately 80,400 tons per year of sediment load reductions; 69,700 pounds per year of phosphorus load reduction; and 142,000 pounds per year of nitrogen load reductions. In 2013 and 2014, the average annual pollutant load reductions for sediment, nitrogen, and phosphorus respectively were 4,048 tons per year; 6,773 pounds per year; and 26,902 pounds per year.

What's Next

The relatively steep decline in average annual load reductions between 2007-2012 and 2013-2014 was primarily due to two factors. First, the allocation of both Section 319 and Clean Michigan Initiative funds was lower in more recent years resulting in fewer BMPs implemented in 2013-2014. Second, the types of projects funded have shifted over time, with a greater emphasis toward education and outreach projects; protection-oriented projects (such as conservation easements and ordinance development); projects to address other pollutants such as *E. coli* and copper mine wastes; and urban storm water projects to implement low impact development and green infrastructure BMPs. These projects are helping the NPS Program achieve other measures of success but they typically report lower sediment, phosphorus, and nitrogen load reductions than other types of projects. The NPS program will continue to evaluate this measure of success through 2017, and then determine whether this measure should be modified or replaced.

Protection and Restoration of Wetlands

MOS-11: Between October 1, 2012, and September 30, 2017, the NPS Program will create or restore at least 60 acres of wetland using pass-through grants.

Progress

Between October 1st, 2012, and September 30th, 2015, 19.8 acres of wetland have been created or restored using pass-through grant funds.

What's Next

The NPS Program is one-third of the way toward reaching this measure of success. Several open projects featuring wetland creation or restoration are set to close by the end of 2017. Upon their completion, the NPS Program will have met and surpassed the wetland acreage measure. Going forward, the NPS Program will continue to feature wetland restoration and creation as a best management practice. Continued coordination with MDEQ wetlands staff will ensure that projects including wetland restoration meet the technical standards of both programs.

Public Outreach Goals

MOS-12: The NPS Program will develop ten I&E “success stories” by 2017. These “success stories” will be posted on the NPS web site.

Progress

Michigan’s NPS I&E success stories are projects that have succeeded in showing measurable improvement in knowledge or behavior regarding restoration and protection of Michigan’s waters. Conducting social surveys before project implementation and comparing results to post-survey results allows the NPS Program to track progress linked to education and outreach work. Two such I&E success stories have been developed by the NPS Program.

What's Next

Eight additional I&E success stories need to be developed by 2017 to meet this measure of success. Michigan’s NPS Program will continue to work to achieve this measure by administering pass-through grants improving knowledge and behavior associated with Michigan’s waterways.

Administrative Goals

MOS-13: The NPS Program will continue to make satisfactory progress in meeting the schedule of short-term actions. Satisfactory progress determinations are made by the USEPA after reviewing annual reporting information.

Progress

The NPS Program made satisfactory progress in FY13 and FY14.

What's Next

The NPS Program will continue to meet with the USEPA to discuss program improvement and continue to provide all of the reporting information needed to ensure that the USEPA is able to oversee our program.

MOS-14: The NPS Program will continue to leverage more than the required 40 percent state and local matching funds (total) for 319 grants.

Progress

Since 2012, the NPS Program has successfully leveraged more than 56 percent state and local matching funds for 319 grants. This included 2008, 2009, 2010, and 2011 fiscal year grants.

What's Next

Michigan's NPS Program will continue working to leverage 40 percent state and local matching funds for current and future 319 grants. Below is a breakdown of the match earned on an annual basis:

FY08

Match required: \$2,038,991

Match earned: \$4,441,861

FY09

Match required: \$2,395,815

Match earned: \$3,541,089

FY10

Match required: \$1,951,733

Match earned: \$3,392,148

FY11

Match required: \$1,947,964

Match earned: \$2,139,524.38

Total required: \$8,334,503

Total earned: \$13,514,622.38

MOS-15: The NPS Program will review and approve at least 20 new nine-element WMPs between January 2012, and December 2016.

Progress

Between January 1, 2012, and December 31, 2015, 20 nine-element WMPs have been reviewed and approved by Michigan NPS Program staff as well as the USEPA. One technical update to the already-approved Kalamazoo River WMP was also completed.

What's Next

This measure has successfully been met. Five additional nine-element approvable WMPs are being reviewed or have been tentatively approved by MDEQ staff and forwarded to the USEPA for approval before December 31, 2015.